WHAT IS CLAIMED IS:

1. A valve drive system for an internal combustion engine, comprising:

a plurality of valves;

springs urging each of the valves towards a middle position between a fully open position and a fully closed position;

magnets each supplied with current to generate electromagnetic force to retain each of the valves at the fully open or closed position against the urging force of each spring, and

a controller that is adapted to stop application of current to at least one magnet for a first valve or a first valve group among the valves at a first timing and stop application of current to at least one magnet for a second valve or a second valve group among the valves at a second timing that is different from the first timing when the internal combustion engine is to be stopped.

2. A valve drive system according to claim 1, wherein the valves are intake valves and exhaust valves of the internal combustion engine.

3. A valve drive system according to claim 1, wherein the second timing is when free oscillation of the first valve or the first valve group has decayed to a specific level.

4. A valve drive system according to claim 3, further comprising a valve displacement detector that detects an amount that the valve is displaced due to its free oscillation, wherein the controller is further adapted to determine based on the valve displacement amount detected by the valve displacement detector that the free oscillation of the first valve or the first valve group has decayed to the specific level.

5. A valve drive system for an internal combustion engine, comprising:

a valve;

springs urging the valve towards a middle position between a fully open position and a fully closed position;

a magnet supplied with current to generate electromagnetic force to retain the valve at the fully open or closed position against the urging force of each spring, and

a controller that is adapted to control application of current to the magnet in such a way that the magnet generates electromagnetic force to bring the valve to the middle position

while suppressing free oscillation of the valve when the internal combustion engine is to be stopped.

6.A valve drive system according to claim 5, wherein the valve is an intake valve or an exhaust valve of the internal combustion engine.

7.A valve drive system according to claim 5, further comprising a valve lift detector for detecting an amount that the valve is lifted, wherein the controller is further adapted to perform a feedback control such that the detected valve lift amount converges on a prescribed target amount that changes in time.

8. A valve drive system according to claim 5, wherein the controller is further adapted to stop application of current to the magnet at a predetermined timing when the valve has been brought from the fully open or closed position to a prescribed position close to the middle position.

9. A valve drive system according to claim 8, wherein

the valve is provided in plurality, and

the predetermined timing is set for each one of the valves or each one of valve groups formed among the valves.

10. A method for driving a plurality of valves mounted in an internal combustion engine including springs urging each valve towards a middle position between a fully open position and a fully closed position and magnets each supplied with current to generate electromagnetic force to retain each valve at the fully open or closed position against the urging force of each spring, the method comprising the steps of:

stopping application of current to at least one magnet for a first valve or a first valve group among the valves at a first timing; and

stopping application of current to at least one magnet for a second valve or a second valve group among the valves at a second timing that is different from the first timing when the internal combustion engine is to be stopped.

11. A method according to claim 10, wherein the valves include an intake valve or exhaust valve of the internal combustion engine.

12. A method according to claim 10, wherein the second timing is when free oscillation of the first valve or the first valve group has decayed to a specific level.

13. A method according to claim 12, further comprising the steps of:

detecting an amount that the valve is displaced due to its free oscillation; and

determining based on the detected valve displacement amount that the free oscillation of the first valve or the first valve group has decayed to the specific level.

14. A method for driving a valve mounted in an internal combustion engine including springs urging the valve towards a middle position between a fully open position and a fully closed position and a magnet supplied with current to generate electromagnetic force to retain the valve at the fully open or closed position against the urging force of each spring; the method comprising the step of:

controlling application of current to the magnet in such a way that the magnet generates electromagnetic force to bring the valve to the middle position while suppressing free oscillation of the valve when the internal combustion engine is to be stopped.

15.A method according to claim 14, wherein the valve is an intake valve or an exhaust valve of the internal combustion engine.

16.A method according to claim 14, further comprising the steps of:

detecting an amount that the valve is lifted; and

performing a feedback control such that the detected valve lift amount converges on a prescribed target amount that changes in time.

17. A method according to claim 14, wherein application of current to the magnet is stopped at a predetermined timing when the valve has been brought from the fully open or closed position to a prescribed position close to the middle position.

18. A method according to claim 17, wherein

the valve is provided in plurality, and

the predetermined timing is set for each one of the valves or each one of valve groups formed among the valves.